

WE CLAIM:

1. A web tensioning device which comprises:
a base;
a dancer arm for engaging the web to be tensioned, having at least
5 one dancer mounted thereon, the dancer arm being movably mounted to the base;
a servo motor operably associated with the dancer arm for
positioning the dancer arm in response to a control signal; and
a controller operably associated with the servo motor for generating
the control output signal in response to a web tension requirement.
- 10 2. The web tensioning device in accordance with claim 1
wherein the controller generates a control output signal in response to movement of
the dancer arm.
3. The web tensioning device in accordance with claim 1
wherein the controller generates a control output signal in response to web feed
15 rate.
4. The web tensioning device in accordance with claim 1
wherein the servo motor is an electric motor.
5. The web tensioning device in accordance with claim 1
wherein the controller generates a control output signal in response to web feed
20 forward rate.
6. The web tensioning device in accordance with claim 1
wherein the dancer arm is pivotably mounted to the base and the servo motor
pivotably positions the dancer arm in response to the control signal.
7. The web tensioning device in accordance with claim 1 and
25 having plural dancers rotatably mounted thereon.
8. The web tensioning device in accordance with claim 1 and
having a pair of dancers rotatably mounted thereon.
9. The web tensioning device in accordance with claim 1 and
having an array of four dancers rotatably mounted thereon.
- 30 10. A web tensioning device which comprises:
a base;
an angular position sensor;

5 a dancer arm for engaging the web to be tensioned, having a free end portion with a dancer rotatably mounted thereon and a fixed end portion pivotably mounted to the base so as to coact with the angular position sensor and indicate relative angular displacement of the dancer arm as a web in contact with the dancer is maintained in tension;

a servo motor operably associated with the dancer arm for pivotally positioning the dancer arm by application of torque in response to a control signal; and

10 a controller for generating the control output signal in response to movement of the dancer arm due to changes in web tension as detected by the angular position sensor.

11. The web tensioning device in accordance with claim 10 wherein the angular position sensor is an encoder operably associated with the fixed end portion of the dancer arm and senses relative angular displacement of the dancer arm.

12. The web tensioning device in accordance with claim 11 wherein the encoder is an incremental rotary optical encoder.

13. The web tensioning device in accordance with claim 10 wherein the servo motor is an electric motor.

20 14. The web tensioning device in accordance with claim 13 herein the servo motor is a limited angle electric motor operably associated with the dancer arm for pivoting the dancer arm by application of torque in response to a control signal.